

## Scientific Inquiry

**8-1 The student will demonstrate an understanding of technological design and scientific inquiry, including process skills, mathematical thinking, controlled investigative design and analysis, and problem solving.**

### **8-1.4 Generate questions for further study on the basis of prior investigations.**

**Taxonomy Level:** 6.1-B Create Conceptual Knowledge

**Previous/Future knowledge:** In 3<sup>rd</sup> grade (3-1.3), students generated questions such as “what if?” or “how?” about objects, organisms, and events in the environment and use those questions to conduct a simple scientific investigation. In 5<sup>th</sup> grade (5-1.1), students identified questions suitable for generating a hypothesis. In 7<sup>th</sup> grade, students generated questions that can be answered through scientific investigation (7-1.2) and critiqued a conclusion drawn from a scientific investigation (7-1.6).

**It is essential for students to** know that only questions which test one independent variable at a time can be answered through scientific investigation and data collection. The question should include the relationship between the independent and dependent variable.

Once the question is tested and data is collected and analyzed, then explanations and conclusions are made and communicated. When the conclusion is communicated it allows others to evaluate and understand the investigation. Sharing ideas may give new ideas or questions for further study. When new questions are generated, recommendations can be made on changes to the design of the investigation and may produce more reliable results.

Questions that can help decide what further investigations may be:

- Can the procedure or product be improved?
- What would happen if another independent variable were tested?
- What are you wondering now?

**It is not essential for students to** conduct investigations to validate further questions.

### **Assessment Guidelines**

The objective of this indicator is to *generate* questions for further study on the basis of prior investigations; therefore, the primary focus of assessment should be to construct questions that can be tested with an investigation related to a prior investigation. However, appropriate assessments should also require students to *exemplify* questions that can be tested through scientific investigations; *critique* a conclusion; *identify* the experimental variables in the investigation to determine a new investigation design; *compare* the results of one investigation with a question for further study; *explain* the relationship between the independent and dependent variable to determine questions for further investigation; or *identify* questions that are appropriate for previously generated conclusions.